Attachment 8
Water Quality and Other Expected Benefits

City of Firebaugh Well Replacement Project

The proposed project will have a direct correlative impact on the water quality that is provided to the residents of Firebaugh. Without a new well, the current well will continue to provide water with extremely high levels of arsenic, as well as polluted and "dirty" water due to the sand sediments that are being drawn up from the well. Without this project, the City will face an emergency water shortage. Solutions to this shortage are not yet known.

With this project, the City of Firebaugh will be able to provide a supply of water to residents that meet the State and Federal water quality standards. Once constructed the Well will immediately supply the water the City demands. This project does not require further infrastructure or water distribution improvements. Rather, the existing water distribution system with the Replacement Well will provide the needed improved water quality.

The methods used to estimate without and with project conditions included discussions with Public Works department staff and officials, review of public health standards and requirements, and analysis of current water quality. Water quality was based on current conditions which reflect without project conditions and the maximum potential of the well which reflects with-project conditions.

Other than providing a higher quality of water, the new project will also provide source capacity for drinking and fire suppression that meets the requirements of the State of California, Department of Health Services. Coupled with the drought conditions the region has been facing, demand is far outweighing the supply. Additionally, the new well will assist the City in its efforts to provide affordable water to its residents by minimizing the cost of water facility operations.

This project will benefit the local population in the City of Firebaugh. This project will relieve the strain on the region's limited water supply. Regional benefits may include alleviate drought conditions, need for imported water, and overall improved water quality.

The project beneficiaries include the residents and businesses in the City of Firebaugh, population 7,025 (according to 2009 Census data).

Upon project completion, the new well will begin services to the community with clean and affordable water.

There is limited uncertainty regarding the benefits identified here. It is difficult to predict what natural sediment or compounds will appear in the future groundwater pumped

through the well. Precautions will be taken prior to well drilling to ensure the location does not contain harmful levels of contaminant. However, as sediment moves and groundwater shifts, changes to contaminant levels are possible.

There are no adverse effects present in this project.

At this time, the City is unable to complete an accurate water quality benefit analysis. To quantify these benefits, the City must dill test-holes to gain a better perspective on the arsenic levels that would be present in the Replacement Well. Until test-holes are drilled and water sampling is available would the City be able to quantify these benefits. Please see the above narrative for a description of the expected benefits.

City of San Joaquin Water Meter Installation

The San Joaquin Water Meter Project is estimated to reduce consumption of water by 20% for those houses being metered. This will also result in reduced flow to the Wastewater Treatment Plant.

The total amount of water pumped by the City of San Joaquin in 2009 was 257.2 mg. The 48 commercial accounts are estimated to have used 12.0 mg of water, based on a prorated amount for those commercial customers that are currently being metered. Therefore, the remaining 905 residential customers used 245.2 mg of water, or 0.271 mg per service per year. The proposed 640 residential customers to receive meters are currently using 173.4 mg and that usage is estimated to be reduced by 20% for a savings of 34.7 mg of water pumped annually.

The San Joaquin Wastewater Treatment Plant treated 120.8 mg in 2009. The percentage of total water pumped which was treated at the WWTP is 47%. The remaining water is being used primarily for landscape irrigation. The projected reduction of flow to the WWTP after the meter project is 47% of 34.7 mg, or 16.3 mg, or a 13.5% reduction of flow to the plant. Table 16 shows the projected flows for the 640 residential customers to receive meters without the project, and an estimated 13.5% reduction in flows with the project. The reduction in flows to the plant for the 640 services will carry through for the life of the project. The cost to treat sewage will escalate over time based on increased costs for salaries, benefits and utilities.

The beneficiaries of the reduction in flows to the Wastewater Treatment Plant will be the rate payers for the City of San Joaquin in the form of delayed or reduced rate increases.

The uncertainty associated with the benefits is the estimated reduction of water use not being as great and the escalation of anticipated operational costs.

There are not adverse effects for the reduction in flows to the Wastewater Treatment Plant.

Table 16 - Water Quality and Other Expected Benefits

City of San Joaquin Water Meter Installation

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of Benefit (Units)	Without Project	With Project	Change Resulting from Project (e) - (d)	Unit $ Value	Annual $ value (f) x (g)(See note 1)	Discount Factor	Discounted Benefits (h) x (i)
2009	WWTP Reduction in flow	Annual sewer flow (mg/yr)	120.8	104.5	16.31	$2,731	$44,530	1.000	$44,530
2010	""	""	120.8	104.5	16.31	$2,301	$37,525	0.943	$35,386
2011	""	""	120.8	104.5	16.31	$3,176	$51,794	0.890	$46,097
2012	""	""	120.8	104.5	16.31	$3,285	$53,572	0.840	$45,000
2013	""	""	120.8	104.5	16.31	$3,403	$55,496	0.792	$43,953
2014	""	""	120.8	104.5	16.31	$3,530	$57,567	0.747	$43,003
2015	""	""	120.8	104.5	16.31	$3,620	$59,035	0.705	$41,620
2016	""	""	120.8	104.5	16.31	$3,716	$60,601	0.665	$40,299
2017	""	""	120.8	104.5	16.31	$3,818	$62,264	0.627	$39,039
2018	""	""	120.8	104.5	16.31	$3,926	$64,025	0.592	$37,903
2019	""	""	120.8	104.5	16.31	$4,041	$65,901	0.558	$36,773
2020	""	""	120.8	104.5	16.31	$4,163	$67,890	0.527	$35,778
2021	""	""	120.8	104.5	16.31	$4,293	$70,010	0.497	$34,795
2022	""	""	120.8	104.5	16.31	$4,431	$72,261	0.469	$33,890
2023	""	""	120.8	104.5	16.31	$4,577	$74,642	0.442	$32,992
2024	""	""	120.8	104.5	16.31	$4,733	$77,186	0.417	$32,186
2025	""	""	120.8	104.5	16.31	$4,899	$79,893	0.394	$31,478
2026	""	""	120.8	104.5	16.31	$5,075	$82,763	0.371	$30,705
		Total Present value of Discounted Benefits Based on Unit Value							**$685,427**

Note 1:
Costs based on Budget for 2009 of $329,853 and inflated annually by the following amounts:

1) Salaries inflated at 5% annually
2) Benefits inflated at 10% annually
3) Utilities costs inflated at 10% annually
4) All other costs inflated at 3% annually

WSID and DPWD Water Supply Enhancement Project

The primary benefit of the project is the improvement in water supply reliability gained by WSID, DPWD and the other CVP contractors and water users south of the Delta. Water quality benefits in the Delta may accrue as operation of the Intertie will improve management of existing water supplies south of the Delta which may in turn reduce demand on Delta water supplies and potentially improve water quality in the Delta. The construction of a fish screen intake on the WSID river diversion will also help in protecting Chinook salmon and steelhead juveniles migrating downstream from their nursery areas in the Merced and Tuolumne Rivers each spring. The continued discharge of recycled water to the SJR by Modesto and Turlock for ultimate delivery to DPWD helps alleviate the persistent water shortage in DPWD and avoids the cost of a pipeline across the SJR and through DPWD as well as the need to provide for seasonal storage of flows generated during periods of low demand. These avoided costs are not part of this project but will be realized by Modesto and Turlock as part of the NVRRWP. These avoided costs are discussed and detailed in the attached NSJVWRP report included in Appendix B. These additional expected benefits are not quantifiable and therefore Table 16 is not included for this project.